

### Signs of disease

Important: animals with disease may show one or more of the signs below, but disease may still be present in the absence of any signs.

#### Disease signs at the farm level

- mass mortality

#### Disease signs at the tank and pond level

- mass mortality

#### Clinical signs of disease in an infected animal

- sores on body — red spots, black burn-like marks, or deeper ulcers with red centres and white rims

#### Gross signs of disease in an infected animal

- fungal hyphae (threads), sometimes extending into visceral organs
- liquefactive necrosis of muscle tissue

### Disease agent

A fungus, *Aphanomyces invadans*, seems to be the primary cause of the disease, but other agents and water quality factors may also play a part in expression of the disease.

### Host range

Fish known to be susceptible to epizootic ulcerative syndrome:

|                    |                                   |
|--------------------|-----------------------------------|
| archer fish        | ( <i>Toxotes chactareus</i> )     |
| Atlantic menhaden* | ( <i>Brevoortia tyrannus</i> )    |
| ayu*               | ( <i>Plecoglossus altivelis</i> ) |
| bagrid catfishes*  | (Bagridae)                        |
| barramundi*        | ( <i>Lates calcarifer</i> )       |

\* naturally susceptible (other species have been shown to be experimentally susceptible)



**Epizootic ulcerative syndrome in sand whiting. Note progression of bruise (top) to deep ulcer (bottom) and classic red sores on body**

Source: New South Wales Department of Primary Industries



**Epizootic ulcerative syndrome in silver perch. Note classic red sores on body**

Source: New South Wales Department of Primary Industries



## Epizootic ulcerative syndrome / red spot disease continued

|                                  |                                    |
|----------------------------------|------------------------------------|
| carp*                            | ( <i>Cyprinus carpio</i> )         |
| cichlids*                        | (Cichlidae)                        |
| climbing perch*                  | ( <i>Anabas testudineus</i> )      |
| cyprinids*                       | (Cyprinidae)                       |
| dusky flathead                   | ( <i>Platycephalus fuscus</i> )    |
| eel*                             | ( <i>Anguilla australis</i> )      |
| flathead goby*                   | ( <i>Glossogobius giurus</i> )     |
| Froggatt's catfish               | ( <i>Cinetodes froggatti</i> )     |
| giant glassfish*                 | ( <i>Parambassis gulliveri</i> )   |
| giant gudgeon*                   | ( <i>Oxyeleotris</i> sp)           |
| grey mullet*                     | ( <i>Mugil cephalus</i> )          |
| mrigal*                          | ( <i>Cirrhinus cirrhinus</i> )     |
| mullet*                          | (Mugilidae)                        |
| nurseryfish                      | ( <i>Kurtus gulliveri</i> )        |
| pool barb*                       | ( <i>Puntius sophore</i> )         |
| rhinofishes*                     | ( <i>Labeo</i> spp)                |
| rockcod*                         | ( <i>Epinephelus tauvina</i> )     |
| scat                             | ( <i>Scatophagus argus</i> )       |
| silver perch*                    | ( <i>Bidyanus bidyanus</i> )       |
| silver trevally*                 | ( <i>Pseudocaranx dentex</i> )     |
| snakeskin gourami*               | ( <i>Trichogaster pectoralis</i> ) |
| striped snakehead*               | ( <i>Channa striatus</i> )         |
| torpedo-shaped catfishes*        | ( <i>Clarius</i> spp)              |
| triangular shield catfish*       | ( <i>Arius leptaspis</i> )         |
| tropical two-winged flying fish* | ( <i>Exocoetus volitans</i> )      |
| wels catfish (sheatfish)*        | ( <i>Silurus glanis</i> )          |
| whiting*                         | ( <i>Sillago ciliata</i> )         |
| yellowfin bream*                 | ( <i>Acanthopagrus australis</i> ) |

### Presence in Asia-Pacific

EUS has been officially reported from Australia, Bangladesh, Burma (Myanmar), Cambodia, India, Indonesia, Japan, Laos, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam.



\* naturally susceptible (other species have been shown to be experimentally susceptible)



Australian Government  
Department of Agriculture,  
Fisheries and Forestry

Sourced from AGDAFF–NACA (2007) *Aquatic Animal Diseases Significant to Asia-Pacific: Identification Field Guide*. Australian Government Department of Agriculture, Fisheries and Forestry, Canberra.

© Commonwealth of Australia 2007

This work is copyright. It may be reproduced in whole or in part subject to the inclusion of an acknowledgment of the source and no commercial usage or sale.



## Epizootic ulcerative syndrome / red spot disease continued

### Epidemiology

- The disease is seen in over a hundred freshwater and estuarine species of fish.
- It has often been associated with acid water run-off and can appear after heavy rains, particularly after a long dry period.
- Secondary bacterial and viral infections are often associated with this condition.

### Differential diagnosis

The differential diagnostic table and the list of similar diseases appearing at the bottom of each disease page refer only to the diseases covered by this field guide. Gross signs observed might well be representative of a wider range of diseases not included here. Therefore, these diagnostic aids should not be read as a guide to a definitive diagnosis, but rather as a tool to help identify the listed diseases that most closely account for the gross signs.

### Sample collection

Because of uncertainty in differentiating diseases using only gross signs, and because some aquatic animal disease agents might pose a risk to humans, you should not try to collect samples unless you have been trained. Instead, you should phone your national hotline number and report your observations. If samples have to be collected, the agency taking the call will advise you on what you need to do. Local or district fisheries/veterinary authorities could advise you on sampling.

### Emergency disease hotline

For your national emergency disease hotline number, see Whom to contact if you suspect a disease.

### Further reading

[http://www.oie.int/aac/eng/cards/en\\_diseasecard.htm](http://www.oie.int/aac/eng/cards/en_diseasecard.htm)

<http://www.enaca.org/Health/DiseaseLibrary/EpizooticUlcerativeSyndrome.pdf>

The currently accepted procedures for a conclusive diagnosis of epizootic ulcerative syndrome are summarised at [http://www.oie.int/eng/normes/fmanual/A\\_00027.htm](http://www.oie.int/eng/normes/fmanual/A_00027.htm)

These hyperlinks were correct and functioning at the time of publication.

